AVAILABILITY AND PROCUREMENT METHODS OF FIRST-LINE TUBERCULOSIS DRUGS IN FOUR RUSSIAN OBLASTS

SUMMARY OF FINDINGS

The study was commissioned by USAID/Moscow, and conducted in four Russian oblasts during July-August 1998

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I. EXECUTIVE SUMMARY

This paper presents a summary of results from a study commissioned by the US Agency for International Development (USAID)/Moscow. The study was conducted between July 27 and August 15, 1998, in the tuberculosis facilities of four *oblasts* (regions) in the European part of Russia. These four oblasts are hereafter referred to as Oblast #1, #2, #3, and #4. The objective of this study was to collect data and report to USAID/Moscow on the availability and procurement methods of the first-line anti-tuberculosis drugs isoniazid, rifampicin, pyrazinamide, streptomycin, and ethambutol during the period of January 1997 to June 1998.

The full report was submitted to USAID/Moscow.

Key Findings

1. The domestically produced first-line tuberculosis (TB) drugs isoniazid, rifampicin, pyrazinamide, streptomycin, and ethambutol are all available on the Russian market.

2. Three of the four surveyed oblasts reported chronic stock-outs of first-line TB drugs for inpatients during 1997 and the first six months of 1998.

3. Mechanisms for reporting stock-outs of TB drugs by TB hospitals to Oblast Health Administrations do not exist.

4. All four oblasts reported that outpatients received subtherapeutic treatment due to the lack of basic TB drugs for outpatient treatment during 1997 and 1998.

5. TB drug shortages may be contributing to the growing rate of drug-resistant tuberculosis.

6. There is no correlation between the amount of money spent per capita in the oblasts on drug purchases and the availability of TB drugs to patients. The availability of drugs is determined mainly by procurement methods.

7. There is a clear relationship between the type of procurement (centralized versus decentralized) and the availability of TB drugs in oblasts, irrespective of means of payment (barter or cash purchases). Barter trade, when managed centrally, can ensure good prices and availability due to volume discounts and oblast government guarantees for suppliers.

8. A relationship exists between procurement methods and the cost of TB drugs for oblasts. Competitive tendering resulted in prices and drug expenditures significantly lower than any other procurement method.

9. TB Action Programs for the years 1998 - 2004 were developed in 1998 by all four oblasts. Those designed by Oblasts #1, #3, and #4 lack clear guidelines for improving drug procurement methods.

II. SUMMARY OF FINDINGS

Data for the present study were collected between July 27 and August 15, 1998, in TB facilities of four oblasts (regions) in the European part of Russia, hereafter referred to as Oblast #1, #2, #3, and #4.

1. The domestically produced first-line TB drugs isoniazid, rifampicin, pyrazinamide, streptomycin, and ethambutol are all available on the Russian market.

A dramatic increase in Russia's TB morbidity rate began in 1992. By 1998, as reported by the Ministry of Health (MOH), it had grown by 108%. In 1997, 108,000 new cases of TB were diagnosed, and the overall morbidity rate was 73.9. During the first quarter of 1998 the number of newly diagnosed cases was 25,656 (including 17,437 children under 14 years of age), 8.1% higher than during the same period in the previous year.

Russian drug manufacturers responded to the growing demand for TB drugs by increasing production of first-line TB drugs by 50% during 1997. According to information obtained from the Russian Center for Pharmaceutical and Medical-Technical Information (Pharmedinfo), Russian drug manufacturers, such as Akrihin, Ferrane, and Saransk Biohimik, have sufficient production capacity in 1998 to satisfy 100% of the country's need for the first-line TB drugs isoniazid, rifampicin, pyrazinamide, streptomycin, and ethambutol.

Akrihin is currently slightly overstocked with TB drugs, reportedly because of a decrease in demand. This is attributed to the appearance of imported drugs, mostly from India, on the Russian market. In many cases Indian drug distributors can afford to offer more favorable payment conditions, specifically longer deferred payment periods.

2. Three of the four surveyed oblasts reported chronic stock-outs of first-line TB drugs for inpatients during 1997 and the first six months of 1998.

The dramatic stock-outs of basic TB drugs for inpatients experienced in Oblast #3 and Oblast #4 TB Hospitals lead to sub-therapeutic treatment of TB patients. For example, to compensate for stock-outs of first-line drugs, Oblast #4 used ftivazid, the Russian-developed analog of isoniazid. Thus the percent of out-of-stock time was less for isoniazid. It was also reported that the substitution of streptomycin with kanamycin is quite common when streptomycin is not available.

Oblast #1 claimed it did not have any stock-outs of first-line TB drugs in TB hospitals during 1997 or 1998, but instead indicated that they experienced shortages of second-line TB drugs used for the treatment of resistant forms: ethionamide, prothionamide, lomefloxacin, ofloxacin, PAS, and mycobutin.

The study findings on the availability of first-line TB drugs in the four oblasts are summarized in the table below.

Table 1: Percent of Time First-Line TB Drugs Were Out-of-Stock in Oblast TB Facilities During 1997 and the First Six Months of 1998 (Total Period = 18 months)

Drug	Oblast #1		Oblast #2		Oblast #3		Oblast #4	
	1997	1998	1997	1998	1997	1998	1997	1998
Isoniazid	0	0	0	0	32.8	0	37	50
*Ftivazid****	0	0	0	0	0	0	16.4***	16***
Rifampicin	0	0	4.6*	18*	0	0	28.7	0
Pyrazinamide	0	0	8.2*	0	100	66.6	0	0
Streptomycin	0	0	0	33.3*	0	0	100**	0
Ethambutol	0	0	12	0	16.4	0	16.4	0

* Drug was not available for outpatients in rural areas.

** Was substituted with kanamycin for outpatients; was available for inpatients.

*** Stock-outs of ftivazid, therapeutic equivalent of isoniazid, were shorter that those of isoniazid.

3. Mechanisms for reporting stock-outs of TB drugs by TB hospitals to Oblast Health Administrations do not exist.

None of the four surveyed oblasts had a mechanism in place through the Oblast Health Administration (OHA) to monitor the availability of TB drugs in TB facilities. Except in Oblast #2, the availability of TB drugs for patients is the sole responsibility of the facilities, and they are not required to report stock-outs to the OHA.

4. All four oblasts reported that outpatients received subtherapeutic treatment due to the lack of basic TB drugs for outpatient treatment during 1997 and 1998.

The situation is even more problematic with TB outpatient treatment. The Oblast #3 OHA has very limited funds to cover exempt prescriptions, mainly because most businesses, especially those in the agricultural sector, do not pay the required contribution to the Mandatory Medical Insurance Fund. Patients are expected to buy drugs themselves. In Oblast #4, outpatients commonly receive free-of-charge monotherapy with whichever TB drug is available in outpatient units.

Oblast #1 OHA reported that TB drugs were available to all patients in the oblast (Table 1). However, data collected in Oblast #1 from municipal pharmacists suggest the opposite. All five first-line TB drugs were on sale in municipal pharmacies, but at a very high price: rifampicin 150 mg ($0.16 per tablet), streptomycin 1 g ($0.27), isoniazid 300 mg ($0.036), ethambutol 400 mg ($0.15), and pyrazinamide 500 mg ($0.19). Oblast #1 OHA does not have the means to cover all exempt prescriptions, and patients must buy the drugs themselves. Most patients from rural areas cannot afford to buy drugs out of pocket. This is one of the reasons why Oblast #1 patients are kept in hospitals for as long as six to eight months, despite the greater expense this incurs.

Of the surveyed oblasts, Oblast #2 is the only one that has established an automated system of TB patient registers. The Oblast OHA contracted a private medical insurance company to keep track of the dispensation of exempt prescriptions. The database of exempt patients, including the TB patients, is thus located in this private medical insurance company. TB patients are required to go to an outpatient unit every ten days during the course of treatment. During each encounter, urine tests are conducted to check compliance, and patients receive a free supply of TB drugs for the next 10-day period. The TB outpatient units then report to the private insurance company. However, as seen in Table 1, the full set of TB drugs is not always available for outpatients.

5. TB drug shortages may be contributing to the growing rate of drug-resistant tuberculosis.

It is of particular concern that drug shortages and interruptions in drug supply may have contributed to the development and spread of drug-resistant TB strains. Oblast #3 TB Hospital reported that in 1997 as many as 54% of all cultures examined were found to be resistant to at least one drug, and 22% were resistant to three or more drugs. The Oblast #4 TB hospital reported that 19.7% of cases the same year were resistant to three or more first-line TB drugs.

OHAs reported the growing rate of relapses among treated patients, which may also be attributed to TB drug shortages in previous years.

6. There is no correlation between the amount of money spent per capita in the oblasts on drug purchases and the availability of TB drugs to patients. The availability of drugs is mainly determined by procurement methods.

Although health officials identify lack of funds as the main reason for drug shortages, there is no correlation between the amount of money spent on drug purchases per capita and the availability of TB drugs in the surveyed oblasts. The following table illustrates actual health expenditures for 1997 for each oblast and TB drug availability ranking.

Table 2: Actual Health and Drug Expenditures and Availability of TB Drugs in Oblasts in 1997, in US dollars (exchange rate $1=5,800 rubles)

	Oblast #1	Oblast #2	Oblast #3	Oblast #4
Population (Million People)	1.3	0.7	0.8	1.4
Oblast Health Expenditures	$16,918,000	$21,622,000	$33,982,760	$73,046,200
Oblast Drug Expenditures	$5,984,000	$2,896,000	$5,148,275	$7,950,000
Oblast Drug Expenditures as % of Health Expenditures	35.3%	13.3%	15%	10.8%
Actual per Capita Drug Expenditures	$4.50	$3.94	$6.17	$5.51
TB Drug Availability Ranking Based on Table 1: (1 = most available; 4 = least available)	**1**	**2**	**3**	**4**

Oblast #3 spends more on drugs per capita than the other oblasts in this study. As noted in the previous section, it also experienced the most dramatic stock-outs. Despite the presence and increased production of all major TB drugs in the Russian pharmaceutical market, the availability of first-line TB drugs at the oblast level is far from adequate. It is clear that there are other reasons for poor drug supply besides just lack of funds.

7. There is a clear relationship between the type of procurement (centralized versus decentralized) and the availability of TB drugs in oblasts, irrespective of means of payment (barter or cash purchases).

Of the four oblasts surveyed, drug availability was clearly better in those oblasts that practice centralized procurement. Both Oblasts #1 and #2 procure drugs centrally, although the reasons are different. In 1997 and 1998 Oblast #1 procured TB drugs through barter trade from a single supplier, Bryntsalov-A, who accepts barter conditions. The oblast also ranked top in TB drug availability (Tables 1 and 2). Barter trade, when managed centrally, can ensure good prices and availability due to volume discounts and oblast government guarantees for suppliers.

Oblast #2 developed and approved a comprehensive local law, *On Drug Supply for Oblast Population*. This law clearly states the obligation of OHA to procure drugs centrally and on a competitive basis. The Oblast Drug Formulary is the basis for the quantification of drug needs. The Oblast Tendering Commission and the Central Medical Store (Pharmacia) are responsible for the competitive procurement of all drugs for public health facilities, including TB drugs. The Governor of Oblast #2 and the Oblast Duma guarantee the obligation of money for drug procurement. The oblast ranked second in TB drug availability, reportedly due to mistakes made during the drug needs quantification process. Quantification of drug needs in all oblasts is based on previous consumption data, and does not seem accurate. No standard formulas are used that would take into account the tendencies of morbidity pattern changes.

In Oblasts #3 and #4 the drug supply system is totally decentralized, and each health facility is responsible for its own drug supply. Although official oblasts policies exist that require competitive procurement, the decentralized system does not allow it to happen. Hospital budgets are formed from "barter trade" funds that are not recognized by many suppliers as "money." This limits drug sources for hospitals to a small number of suppliers willing to engage in this type of trade, making procurement inefficient and unpredictable.

8. A relationship exists between procurement methods and the cost of TB drugs for oblasts. Competitive tendering resulted in prices and drug expenditures significantly lower than any other procurement method.

As discussed above, the amount of money spent per capita on drug purchases does not correlate with the actual availability of TB drugs to patients. The results of the present study show that even small drug budgets, when guaranteed and spent rationally, ensure better availability of drugs over larger budgets. This is illustrated by the results from Oblast #2 and Oblast #3 in Table 2.

Oblast #2 follows federal and oblast level drug procurement policies. Although the experience of Oblast #2 in tendering is limited, since competitive procurement techniques were only introduced in 1997, the system may be considered to be in place. The first important step in the procurement process is the quantification of drug needs. This is conducted by the Oblast Formulary Committee strictly on the basis of the Oblast Formulary List. The Committee then calculates the drug budget for the following year and passes it for approval by the Governor. The Governor's approval guarantees budget appropriation. It should be noted that the drug budget is very limited due to economic constraints, and the oblast cannot afford all of the drugs listed in its Formulary.

Subsequently, the Oblast Tender Commission announces a competitive tender. For a fee of 315 rubles (approximately US$50) drug suppliers can obtain the tender documents. Strict time limits are established for submitting the bids. Tender adjudication is performed by the Tender Commission, and contracts are awarded to the winners. Oblast #2 practices split contract awards to the first two winners, provided that the second winner agrees to comply with the terms offered by the first winner. First-line TB drugs are procured together with other drugs for public health facilities. In the 1998 tender, contracts for TB drugs were awarded to two distributors, Pharmimex of Moscow, and JSC MiH of Saint Petersburg. The first-line TB drugs were listed in tender documents under generic names, and except for ethambutol, which is made in India, all are manufactured in Russia.

By using competitive centralized procurement, Oblast #2 pays less for the TB drugs than any other of the oblasts surveyed. It was estimated by the Oblast #2 OHA that 1997 tender techniques led to savings of 22% to 68% on TB drugs, depending on the drug.

Oblast #1 does not have funds for drug purchases readily available. Instead, the Oblast Administration allocated a certain amount of alcohol produced in the oblast as a barter trade commodity. However, the largest Russian suppliers, such as Akrihin and Pharmimex, do not accept barter trade. That is why in 1997 and 1998 most drugs for public health (including all first-line TB drugs) came from a single supplier, Bryntsalov (a manufacturer/distributor). Bryntsalov barters drugs for alcohol in many Russian oblasts. Nonetheless, this results in fairly good availability of TB drugs for hospitals, but at a higher cost than Oblast #2 paid.

The Oblast #1 OHA calculated that it would spend half as much on TB drugs if it were to practice competitive procurement, but the survey data suggest a more moderate level of savings. Prices paid by the Oblast #1 OHA are higher than the average Russian market prices by approximately 25%. This can be attributed to the volume discounts Oblast #1 gets from Bryntsalov because of the centralized nature of procurement. The pharmaceutical company owned by Bryntsalov produces only streptomycin and rifampicin. Other TB drugs are purchased by Bryntsalov in bulk from other manufacturers, such as Akrihin, and resold to Oblast #1 OHA with a 25-30% mark-up. All first-line TB drugs supplied to Oblast #1 by Bryntsalov are manufactured domestically.

In both Oblast #3 and Oblast #4 the situation is dramatically different. Because neither oblast has guaranteed funds for drug procurement, drugs are purchased sporadically whenever funds become available. In both oblasts, due to decentralized procurement, state procurement agencies and the Pharmacia play a small role supplying drugs to TB hospitals (less than 20% in Oblast #4 and less than 10% in Oblast #3). The TB hospitals in these two oblasts are individually responsible for TB drug procurement. Since the TB hospitals cannot guarantee timely payment to suppliers and offer only barter trade, they pay very high prices.

The Oblast #4 TB Facility calculated its actual expenditures on five first-line TB drugs during the first six months of 1998. This was compared to the amount they could have spent had they used money instead of barter funds, made timely payment to suppliers, and practiced competitive procurement. By their estimate, the 220-bed TB Facility should spend approximately US$10,250 a month on drugs. Instead, the actual expenditures were as high as US$23,391 a month, or 228% of the estimated need. The highest prices were paid for ethambutol (316% of the estimated average competitive price), and pyrazinamide (305%).

To secure revenues, drug suppliers charge significantly above the average market price. As a result, the amount of debt grows, and consumers find themselves tied to certain suppliers with no hope of breaking the vicious circle. At the time of this survey, the Oblast #4 TB Hospital owed suppliers the equivalent of US$103,370. Likewise, the Oblast #3 TB Hospital, which procures from the same suppliers, owed US$96,700.

In Oblast #3, where the per capita expenditures on drugs are the highest of the surveyed oblasts ($6.17), a large proportion of the drug budget is spent on paying outstanding debts. At the time of this survey, the Oblast #3 OHA owed TB drug suppliers US$1,306,450 for drugs delivered. This sum represents 130% of all funds planned for 1998 to implement the TB Action Program.

The study findings about procurement methods and their impacts on the cost and availability of TB drugs in the four oblasts are presented in the following table.

Table 3: The Impact of the Oblasts' Drug Procurement Methods on Cost and Availability of First-Line TB Drugs

Indicator	Oblast #1	Oblast #2	Oblast #3*	Oblast #4
Oblast competitive procurement policies in place	Yes	Yes	Yes	No
Drugs procured competitively	No	Yes	No	No
TB drugs are procured centrally	Yes	Yes	No	No
Method of payment: Barter - B, Cash - C	B	C	B	B
Ranking: Cost of 5 First-Line TB drugs for oblast (1 = lowest; 4 = highest)	2	1	3*	4*
Availability Ranking from Table 1: (1 = most; 4 = least)	1	2	3	4

* In Oblast #3, price information was obtained only from the State Enterprise Pharmacia. The State Enterprise Pharmacia procured in 1997 less than 10% of all TB drugs used in Oblast #3 from the suppliers Akrihin, Ferrane, and Saransk Biohimik. The Oblast #3 TB Hospital procures mainly from the Indian company Pragati International (isoniazid, rifampicin, pyrazinamide, and ethambutol), and from the North-Western Board of Wholesale Medical Trade (streptomycin). Both companies' offices are located in Saint Petersburg. It was impossible to identify the prices paid. It is safe to assume that the prices paid by the Oblast #3 TB Hospital are higher than those paid by the Pharmacia.

9. TB Action Programs for the years 1998 - 2004 were developed in 1998 by all four oblasts. Those designed by Oblasts #1, #3, and #4 lack clear guidelines for improving drug procurement methods.

In accordance with the Russian Government Decree #260 of March 7, 1997, *On Measures of Preventing the Spread of Tuberculosis in Russia*, the Ministry of Health Order #193 of July 3, 1997, *On Establishing the State System of Epidemiological Monitoring of Tuberculosis*, and the February 1998 Ministry of Health Order #33, *On Approval of Standards (Model Protocol) of Tuberculosis Patient Management*, all four surveyed oblasts developed and passed their 1998-2004 TB Action Programs. The oblasts' TB Action Programs include plans for preventive and diagnostic actions, the construction and renovation of TB facilities, diagnostic and treatment equipment needs, population education, program budget, and time lines.

In their TB Action Programs, oblasts rely heavily on federal inputs (up to 40% of the Oblast #3 program budget, and 50% of the Oblast #1 budget). This does not seem realistic, since in the past three years none of the surveyed oblasts received any TB funding from the federal government. The only exception is Oblast #2, where the TB Action Program budget is totally composed of oblast funds.

Of the four analyzed TB Action Programs, only Oblast #1 has a specific line item for needed TB drug expenditures. It is unclear, though, if the $418,225 annually planned for TB drugs includes the expected federal subsidies.

All four TB Action Programs studied indicate a clear tendency in oblasts to shift the focus of TB treatment to an inpatient setting. Big portions of TB Action Program funds are allocated to erect new TB hospitals and sanatorias, or remodel and expand the existing ones to increase their capacity. This is done because the majority of TB patients in oblasts belong to at-risk "anti-social" groups (ex-convicts, alcoholics, homeless, etc.), who, once released from a TB hospital, seldom comply with outpatient treatment schedules or cannot afford TB drugs out of pocket. For example, Oblast #3 plans to allocate $220,000 in 1998 to drugs for TB outpatients. The amount will be reduced to $190,000 in 1999 as Oblast #3 hopes to erect several new TB facilities, and thus shift TB treatment to hospitals for more controlled therapy. At the same time, the Oblast #3 TB Action Program does not indicate how much money will go to TB drugs for inpatients.

Basically, none of the oblast TB Action Programs mentions the improvement of policies or drug procurement as measures to ensure the availability of drugs. Interviews with oblast health officials indicated that they do not see any deficiencies in oblast drug policies and procurement regulations, and attribute drug shortages solely to lack of funds and absence of federal input. The only exception is Oblast #2, with its clearly defined drug policy and procurement strategy.

III. RECOMMENDATIONS

1. Further study may be required to investigate the quality of domestically produced TB drugs.

2. Russian regions may benefit from establishing a system to report TB drug stock-outs.

3. Efforts should be made to promote centralized and competitive procurement of TB drugs at the oblast level.

4. Policy and enforcement mechanisms are needed to show the commitment of OHAs to having an adequate drug supply for public health facilities. Such policies may include:

   - development of, and strict adherence to, local essential/formulary drug lists;
   - implementation of modern drug quantification techniques;
   - centralized procurement for public health facilities based on a list of preselected drugs;
   - strict control of drug distribution through every step of the system from the medical store down to the patient;
   - implementation of drug utilization review programs.

5. Oblasts should consider ways of making outpatient treatment more effective by facilitating purchases of TB drugs for these patients, rather than erecting new facilities that encourage extended inpatient treatment.

6. In light of the serious situation with TB in Russia, efforts should be made to guarantee funds for purchases of TB drugs. This approach was found successful in Oblasts #1 and #2.